

EVALUATION OF TRANSOVARIAN UPTAKE OF METABOLITES

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This study was conducted to determine uptake of metabolites by the ovary of anaesthetized ewes. To assess uptake, arterio-venous differences in concentration of metabolites and oxygen across the ovary were determined at frequent intervals. These arterio-venous differences are correlated with ovarian activity.

Ovarian metabolism was evaluated in five ewes using methods described by Rabiee et al. (1992). Sheep 1 and 2 had dominant follicular structures (F), sheep 3 and 4 had dominant luteal structures (L), and sheep 5 had no significant ovarian structures (Q).

Data (means and 95% confidence interval for the means) for ovarian blood flow (OBF), oxygen saturation (O₂%), 3-hydroxybutyrate (3-OBH) and free fatty acid (FFA) uptake are given in the table. Blood flow to the luteal ovaries appears to be higher than the F or Q ovaries, but oxygen uptake appears to be higher in the F ovaries. Ovarian 3-OBH uptake was significant in only one sheep and only one sheep appeared to have significant uptake of FFA.

	F		L		Q
	sheep 1	sheep 2	sheep 3	sheep 4	sheep 5
O ₂ (%)	13.0 (6.8-19.5)	12.0 (0.5-23)	-0.9 (-2.6-0.7)	-0.3 (-3.5-2.8)	4.6 (-14.2-23.8)
3-OBH (mM)	0.1 (0.01-0.2)	0.1 (-0.1-0.3)	1.6 (1.2-2.0)	-0.4 (-2.0-1.2)	-0.3 (-0.5-(-0.1))
FFA (umol/L)	-458 (-1000-84)	355 (-27-737)	-618 (-1140-(-96))	381 (241-520)	-18 (-121-84)
OBF (ml/min)	3.0 (2.9-3.1)	2.8 (2.5-3.2)	3.3 (3.0-3.5)	4.2 (3.8-4.6)	1.8 (1.4-2.1)

Higher blood flow to luteal ovaries is consistent with previous studies (Niswender et al. 1976). Higher oxygen use by follicular ovary is also consistent with studies in anaesthetised women (Fraser et al. 1973). The reasons for the higher oxygen uptake by follicular ovaries are unclear. It does not appear that 3-OBH or FFA are significantly utilised by the ovaries of most sheep.

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